Ontario

A Mixed Farm Example:

Your Livestock Operation Under the Nutrient Management Act, 2002

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Introduction

This booklet is part of a series of livestock information books developed to help farmers understand the implications of the *Nutrient Management Act, 2002* and the associated regulations and protocols. The act addresses how nutrients, including manure, are managed while they are stored and applied to farmland for the purpose of growing agricultural crops.

For more information, or to see all of the titles in this series, visit the OMAFRA Web site at **www.omafra.gov.on.ca** or call the Agricultural Information Contact Centre at 1-877-424-1300.

For more information on provincial acts and regulations, visit the Ontario Statutes and Regulations Web site at **www.e-laws.gov.on.ca**. You can access the applicable forms online at **www.gov.on.ca**.

The farm operation information used in this booklet is not based on any existing farming operation and is for demonstration purposes only.

Some Common Acronyms

The *Nutrient Management Act, 2002* brought with it new terms that have quickly become common, and are usually abbreviated. These include:

Manure Storage Software Program	MSTOR
Minimum Distance Separation	MDS
Nutrient Management Act, 2002	NMA or act
Nutrient Management Computer Program	NMAN
Nutrient Management Strategy	NMS
Nutrient Management Plan	NMP
Nutrient Unit	NU
Nutrient Management Act, 2002 General Regulation	O. Reg. 267/03 or the regulation

Farmers planning to apply for a building permit for a livestock barn and/or permanent manure storage, and those with large operations, need to be aware of the recent nutrient management legislation. This booklet reviews two key documents – the Nutrient Management Strategy (NMS) and the Nutrient Management Plan (NMP) – and the requirements that must be met in order to obtain approval of the NMS and/or NMP (NMS/P). An NMS/P will assist the agricultural operator in managing nutrients in a way that will be environmentally friendly and economically viable. An approved NMS/P can be used in the process of obtaining a building permit for a new or expanding nutrient storage facility. Many of the requirements in the regulation do not come into force until the farmer is required to have an NMS or NMP.

Nutrient Units and Compliance Schedule

All farms planning on building a barn or manure storage (including earthen storage) located within 100 m (328 ft) of a municipal well or applying non-agricultural source materials (NASM) are now affected by the NMA. In addition, farms ≥ 300 NU are also affected by the act. The size of the agricultural operation is determined by the number of nutrient units (NUs) on that agricultural operation. An NU is defined as having the fertilizer equivalent of 43 kg of nitrogen or 55 kg of phosphorus (whichever is lower). NUs were created to enable the fair comparison of various nutrient types including agricultural, non-agricultural and commercial products (in essence an apples-to-apples comparison). A farm is defined as land no smaller than a single deed that meets the requirements of section 5 of the regulation.

How does the *Nutrient Management Act, 2002*, affect farmers?

The table below provides examples of the number of animals needed to make one NU. A complete listing for a variety of livestock can be found in the Farm Unit Declaration Form in the Appendices Section.

Number of Animals per Nutrient Unit on Farm Units Generating Manure

Type of Animal	Nutrient Units (animals/ NU)
Beef Cows – Includes calves to weaning	1.0
Beef Shortkeep (12.5 – 17.5 months)	2.0
Beef Backgrounders (7 – 12.5 months)	3.0
Beef Feeders (7-16 months)	3.0
Chicken Broilers (8 week cycle)	351
Chicken Broilers (9 week cycle)	300
Chicken Broilers (10 week cycle)	250
Chicken Broilers (12 week cycle)	199
Chicken – Broiler Breeder Growers (females + males transferred out)	300
Chicken – Broiler Breeder Layers (females + males transferred in)	100
Dairy Cow – Milking Age Large Frame	0.7
Dairy Heifers – Large Frame	2.0
Dairy Calves – Large Frame	6.0
Horses – Large Frame	0.7
Horses – Medium Frame	1.0
Horses – Small Frame	2.0
Sheep – Meat Ewes and Rams (including unweaned offspring and replacements)	8.0
Sheep – Feeder Lambs	20.0
Sheep - Dairy Ewes and Rams (including unweaned offspring and replacements)	6.0
Swine Feeders	6.0
Swine Sows – Dry and Boars Non-SEW	3.5
Swine Sows – Dry and Boars SEW	3.33
Swine Sows – With Litters Non-SEW	3.5
Swine Sows – With Litters SEW	3.33
Swine – Weaners Non-SEW	20.0
Swine – Weaners SEW	20.0
Turkey – Toms > 10.8 kg	76
NOTE: For animals not listed on the chart above, the number of animals per nutrient unit can be calculated by determining the number of animals that will produce the amount of nutrients that give the fertilizer replacement value of the lower of 43 kilograms of nitrogen or 55 kilograms of phosphate as nutrient.	

Nutrient Management Strategy and Nutrient Management Plan

The focus of the new act is the requirement for a NMS/P.

A NMS describes the generation, storage and destination of the nutrients produced. Essentially, in completing a NMS, farmers answer the questions, "How much manure is being produced?", "How is the manure stored?" and "Where is the manure to go?" People who own or control a livestock operation that has been phased-in must complete a NMS.

A NMP determines the details of how the generated nutrients (i.e., manure) are to be applied to a given land base. The NMP optimizes the application of nutrients to crops and enhances protection for ground and surface water.

All farm units ≥ 300 NU, and within 100 m of a municipal well, that generate nutrients and apply those nutrients to the land must prepare a NMP once the farm unit has been phased-in under the NMA.

A NMP determines the rate and timing of application of manure based on a number of different factors. These factors include:

- existing soil nutrient levels as determined through soil testing at an OMAFRA-accredited lab
- nutrient content of the manure as determined through testing or book values
- crops to be grown in the next five years
- crops grown on the land in the past year
- soil type and slope of the land
- tillage practices used
- method and timing of manure application
- manure applications over the past three years
- proximity to surface water, including wells.

Completion of the NMS and NMP

There are two ways to complete a NMS/P. You can either complete the documents yourself or hire a certified consultant. Any person who prepares the NMS/P will need provincial certification.

Do It Yourself

There are several tools that can help you complete an NMS/P, two of which are:

- NMAN Software – a computer program developed by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) that contains all of the forms and calculations necessary for a complete NMS/P, with the exception of the required sketches. OMAFRA offers training on how to complete a strategy or plan that includes using the NMAN software.
- NMAN Workbook – a paper version of the key elements of the NMAN program. OMAFRA offers a training course on the theory and science behind NMAN and the NMAN workbook with an opportunity to use this tool. The software does provide greater detail in some areas.

To complete your NMS and/or NMP, you will need some additional forms (e.g., Farm Unit Declaration, Nutrient Management Strategy and/or Plan Sign-Off, etc.). These can be accessed at **www.gov.on.ca**.

You may choose to use another software application. However, OMAFRA only offers technical support for NMAN software.

Farmers who choose to do their own NMS/P must obtain the following certificate:

Certificate Title	For	Timeline
Agricultural Operation Planning Certificate	Agricultural operators who plan to prepare their own NMS/P	Must be certified before submitting their strategy or plan for approval

A list of the necessary courses, dates and locations are available by calling the Agricultural Information Contact Centre (AICC) at 1-877-424-1300 or from the OMAFRA Web site at **www.omafra.gov.on.ca**.

Hire a Consultant

Many farmers hire consultants to complete their NMS/P on a fee-for-service basis. Anyone completing plans and strategies for others must be certified by OMAFRA. A list of consultants that are certified by OMAFRA can be obtained by contacting the AICC at 1-877-424-1300 or from the OMAFRA Web site at **www.omafra.gov.on.ca**.

Consultant fees will vary, depending on the complexity of the situation and the acreage involved. Plans must be updated every five years and reviewed on an annual basis.

If events listed in sections 22 or 26 of the regulation occur to the operation prior to the five-year mark, then the NMS/P must be updated. Minor changes to a strategy or plan (e.g., fall spreading versus spring spreading) must be documented and require the farm operator to update the NMS/P to ensure the appropriate utilization of the manure.

Regardless of who completes the NMS/P, it is the responsibility of the farmer to ensure that the NMS/P is implemented and that all nutrient application activities are documented.

Planning for the expansion or upgrading of a farm operation can also include a number of important business planning and financial management decisions. The Canadian Farm Business Advisory Service provides low cost access to qualified independent business management consultants who can help you assess the financial performance of your current operation, consider your business options, and develop a full set of projections for any planned changes.

The Canadian Farm Business Advisory Service has three program components:

The Farm Business Assessment provides up to five days of consultation with a qualified farm business advisor to assess your current business, look at your business planning options, and develop financial projections for the changes and options you are considering. Eligible producers can access this service for a nominal fee of $100. A list of qualified advisors providing this service in your area is available by contacting Canadian Agri-Renewal Services at the telephone number below.

The second component, Specialized Business Planning Services, is available to producers who require a more specialized business plan for a major business change – such as an expansion plan or farm succession plan. This program offers government assistance of up to 50%, to a maximum of $8,000, to help offset the cost of hiring qualified consulting services.

The third component, Planning and Assessment for Value Added Enterprises, focuses specifically on assessing the feasibility and business planning needed before establishing or expanding ventures designed to add value to agricultural products. This program also provides assistance of up to 50% of the cost of consulting services – to a maximum of up to $10,000 per producer.

Information on any of these business planning services is available by calling Canadian Agri-Renewal Services toll free at 1-866-452-5558. Producers in Northern Ontario can call 1-800-461-6132.

Phase-in Periods

Livestock farms will be required to comply with the NMA as per the following schedule:

Size of Operation (in NU)	Phase-in	NMS/NMP
≤5	Not affected	Not required
Operations ≥300 (Existing or Expanding)	September 30, 2005	NMS and NMP
New and Expanding* operations >5 and <300 NU	December 31, 2005	NMS (and NMP if applicable)

** Construction of structures to house farm animals or manure storage or the building of an earthen storage*

When submitting a plan, allow sufficient time for data collection, NMS/P preparation, review and approval. Errors in the NMS/P can result in the NMS/P being returned for clarification or correction and can cause delays in the approval process, thus extending the approval time. Keep in mind that some municipalities may require a NMS/P for farms not covered by the regulation. It is important to check with your municipality to determine whether there are additional requirements that must be met.

Building Permits for Phased-in Farms

The NMA outlines criteria that must be met for building new permanent manure storage facilities. While the NMA, regulations and protocols outline the criteria that must be met before a building permit is issued for a new permanent manure storage facility, there are additional requirements that you must also follow to satisfy the *Ontario Building Code, 1992*.

Engineered Plans and Construction Supervision

Once operations are required to have a NMS/P, there are standards that apply under the regulation for the construction or expansion of permanent nutrient storage facilities. These include external permanent manure storage facilities and in-floor storage structures in the barn. The regulation requires these facilities to be designed and their construction supervised by a professional engineer. The only exception is solid manure storages with a floor area of less than 600 m^2, walls less than 1.0 m high and a volume of less than 600 m^3. To obtain a building permit for a permanent liquid nutrient storage facility or a permanent solid nutrient storage facility ≥300 NUs and without a concrete floor, the engineer must submit a site plan, a geotechnical investigation report and detailed construction drawings. The engineer is responsible for inspection during the period of construction.

Site Plan

According to the NMA, a minimum distance must be maintained between the manure storage facility and various water sources.

Minimum Distance between the Permanent Manure Storage and:	Distance (metres)
A drilled well (>15 metres deep)	15
A municipal well	100
Other wells (dug, bored)	30 (90 if the facility will store non-agricultural source materials)
Surface water	50 (as measured along the flow path)
Field drainage tiles	15
Tile inlets	50 (as measured along the flow path)
A flood plain	No building within the 100-year flood line*

** Unless a permit has been obtained under Section 28 of the Conservation Authorities Act*

Surface water includes ponds, wetlands, lakes, rivers, creeks or artificial channels that support aquatic-type plants. A grassed waterway for erosion control is not considered surface water and neither is a dug-out pond as long as it has no connection to surface water (see Section 2.(1) and (2) in the regulation for clarification).

The distance is measured from the permanent manure storage facility to the top of the bank, of surface water.

Minimum Distance Separation (MDS) for Odours

The MDS formulas establish an appropriate distance separation between livestock barns, permanent manure storage facilities and neighbours. These are currently part of provincial land use policy. They are not a requirement of the regulation. Most municipalities have incorporated these guidelines into their zoning bylaws. In these cases, the MDS distances will have to be met before a building permit is issued. The municipality can provide you with the necessary MDS calculations based on information you supply.

Site Characterization

A professional engineer or geoscientist must complete a site characterization for construction or expansion of a permanent liquid nutrient storage facility or a solid permanent nutrient storage facility ≥300 NUs without a concrete floor. The site characterization establishes the hydrogeologic characteristics of the soil and the depth to the groundwater or bedrock. The soil characterization may be done by a lab analysis of a soil sample, an on-site test, or, if the soil is very heavy, a visual assessment by a professional. The results of this investigation will determine the design criteria for a permanent manure storage facility. This chart shows under which circumstances these options must be used.

	Soil Conditions Required between the Tank Bottom and the Bedrock or Aquifer	Tank Design Details
1	• 1.0 m of hydraulically secure soil* or • 1.0 m of soil with more than 15% clay	• Unlined tank, unreinforced floor
2	• 0.5 m of hydraulically secure soil* or • 1.0 m of soil with at least 10% clay	• Unlined tank, reinforced floor
3	• 1.0 m of native undisturbed material or • 1.0 m of compacted granular material	• Lined tank, unreinforced floor
4	• 0.5 m of native undisturbed material or • 0.5 m of compacted granular material	• Lined tank, reinforced floor

**one having a maximum saturated hydraulic conductivity of 1 x 10^{-8} metres per second. This is determined by a lab test of the soil. It is roughly equivalent to a soil with at least a 20% clay content.*

Reinforcing the floor or lining the excavation is costly. Farmers should also consider moving the storage to a more suitable location.

Construction Drawings

Detailed construction drawings of the manure storage (concrete, steel or earthen) and of liquid manure transfer systems are to be provided by a professional engineer. The regulation lists specific design requirements that must be met.

Storage Capacity

The regulation requires a minimum of 240 days of nutrient storage capacity, which can be comprised of:

- the capacity of the storage, less an allowance for accumulated precipitation (for open-top structures) and a 0.3 m freeboard at the top;
- temporary storage of manure in the field (solid manure only); and/or
- off-site or off-farm storage capacity if it is identified/explained in the NMS/P.

The MSTOR computer program can determine the required manure storage volume. It is part of the NMAN program.

Options for periods less than 240 days are provided for situations described in the regulation (e.g. NMS, NMP, broker, animals inside for part of year).

When expanding nutrient storage, farmers may decide to:
- add enough storage to take the expanded operation up to 240 days of storage as per the minimum requirement, or
- build larger (e.g. up to a full year of storage).

A larger tank gives more flexibility and options for spreading times. Under the following conditions, this situation can be an advantage.

- **Wet conditions in fall** – severely restrict spreading opportunities. When followed by a wet spring, this can lead to tanks overflowing when storage capacity is borderline.
- **Light soils (e.g. sandy loam)** – as calculated in NMAN, it may be recommended that spreading be delayed until cooler fall weather, in order to retard the conversion of ammonium to nitrate and reduce the risk of groundwater contamination. If this is the case, 240 days of storage may be insufficient.
- **Circular manure tanks** – the extra storage can prove less costly, as a large economy of scale applies to circular manure tanks.

Consider whether the benefits of increased storage capacity outweigh the added capital cost.

Manure Transfer Systems

On phased-in farms, the pipes and the connectors used to drain pits and transfer the manure to long-term storage must now use gasketed fittings.

Manure Application Issues

There are several considerations that will affect the location of land available for manure application. A reduction in manure application rates may be caused by the buffer zones next to surface water or dug, drilled or municipal wells.

Buffer Zones

A vegetated buffer zone of at least 3 m in width must be established next to any top of bank of surface water such as a lake, pond, ditch or creek that supports aquatic-type plants. This does not apply to a grassed waterway or a roadside ditch that has no stream. Within 10 m of this buffer strip, the manure will have to be injected or incorporated within 24 hours unless there is a living crop or at least 30% crop residue.

Water Wells

Manure, non-agricultural source materials and fertilizers are not to be applied closer than the distances shown below:

Well Type	Setbacks for Ag. Source Materials	Setbacks for Non-Ag Source Materials	Setbacks for Commercial Fertilizer/Compost
Municipal well	100 m	100 m	100 m
Drilled well*	15 m	15 m	3 m
Other wells	30 m	90 m	3 m

** Drilled well refers to a well with a minimum depth of 15 m, and a continuous watertight casing with a minimum depth of 6 m. Wells that meet these criteria are normally, but not necessarily, drilled.*

Tom Bruce Farms is a family-owned mixed livestock operation located in Wellington County. The business is run as a sole proprietorship owned by Tom Bruce. Tom has recently completed an Environmental Farm Plan, and based on the results has decided to access funds to improve his manure storage capacity. Tom plans on constructing a new solid manure storage facility in order to obtain 240 days of storage capacity. All the land that Tom owns will be included as part of his Farm Unit and all manure generated will be applied to those lands. Tom will require a building permit from the municipality for the construction of the new manure storage facility. Tom's operation will require an approved Nutrient Management Strategy (NMS) since he is applying for a building permit to construct a manure storage facility for a livestock operation greater than 5 nutrient units.

Summary of Farm Operation

Characteristics	Existing Operation	Proposed Operation
Livestock	• 70 Beef, feeders (7-16 months) • 62 Swine, sows - farrow to finish, non-SEW • 40 Sheep, meat ewes and rams (including unweaned offspring)	No change
Farm Size	Owns 78.9 ha (195 ac) 74.1 ha (183 ac) tillable over three properties	No change
Manure Storage	**Existing Operation**	**Proposed Operation**
Circular Tank	18.3 m x 3.0 m (60 ft x 10 ft); uncovered circular concrete tank; collection of liquid manure generated by sows and weaners and the runoff produced from the cattle yard	New covered rectangular solid storage 18.3 m x 15.2 m x 2.4 m (60 ft x 50 ft x 8 ft); solid manure generated by the beef feeders and swine finishers will be mixed and stored in this structure
2-Storey Barn Ground Level (Cattle)	18.3 m x 15.2 m (60 ft x 50 ft); approximately 0.60 m (2 ft) of deep bedded pack	
Hoop Structure (Swine Finishers)	42.7 m x 12.2 m (140 ft x 40 ft); approximately 0.30 m (1 ft) of deep bedded pack	
Hoop Structure (Sheep - Ewes)	12.2 m x 6.1 m (40 ft x 20 ft); approximately 0.30 m (1 ft) of deep bedded pack	

- Tom cash crops on a 5-year rotation of corn, corn, winter wheat, hay, and haylage
- both manure and commercial fertilizer is used to supplement crop nutrient needs
- all feed is grown on the farm
- all land is owned

A Mixed Farm Example

Property Description:

Home Farm: Concession 1, Lot 1, County of Wellington
Tillable Area: 34.4 ha (85 ac)
Area Available for Manure Application: 34.2 ha (84 ac)
Number of Fields: 6

- Field 1: 4.9 ha (12 ac) tillable; 4.9 ha (12 ac) is available for nutrient application. A 15 m (50 ft) setback from the drilled well on the farm is required.
- Field 2: 8.1 ha (20 ac) tillable; 8.1 ha (20 ac) is available for nutrient application.
- Field 3: 6.1 ha (15 ac) tillable; 6.1 ha (15 ac) is available for nutrient application.
- Field 4 4.0 ha (10 ac) tillable; 4.0 ha (10 ac) is available for nutrient application.
- Field 5: 4.0 ha (10 ac) tillable; 4.0 ha (10 ac) is available for nutrient application.
- Field 6: 7.3 ha (18 ac) tillable; 7.1 ha (17.5 ac) is available for nutrient application. A creek runs through the southwest corner of this field.

Manure is generated on this property. Both manure and commercial fertilizer are applied to this property.

Second Farm: Concession 2, Lot 1, County of Wellington
Tillable Area: 20.6 ha (50 ac)
Area Available for Manure Application: 19.8 ha (49 ac)
Number of Fields: 2

- Field 1: 10.1 ha (25 ac) tillable; 9.7 ha (24 ac) is available for nutrient application. From the beginning of May to the end of November this property is used to pasture the sheep. A creek runs along the western and southern boundary of the field.
- Field 2: 10.5 ha (26 ac) tillable; 10.1 ha (25 ac) is available for nutrient application. A creek runs along the southern boundary of the field.

Third Farm: Concession 1, Lot 3, County of Wellington
Tillable Area: 15 ha (37 ac)
Area Available for Manure Application: 14.2 ha (35 ac)
Number of Fields: 2

- Field 1: 8.1 ha (20 ac) tillable; 7.7 ha (19 ac) is available for nutrient application. A creek runs along the northern boundary of the field.
- Field 2: 6.9 ha (17 ac) tillable; 6.5 ha (16 ac) is available for nutrient application. A creek runs along the southern boundary of the field.

Area Summary:
Total Area Owned: 78.9 ha (195 ac)
Total Tillable Area: 70 ha (173 ac)
Total Area Available for Manure Application: 68.2 ha (169 ac)
Rented: 0 ha (0 ac)

Manure System

The beef feeders are kept in an outdoor concrete yard with access to the barn that contains a bedded pack. The yard is cleaned weekly. The sows, litters and weaner hogs are on a liquid manure system with the manure being stored in an uncovered concrete circular tank. Feeder hogs are raised in a hooped barn on a solid pack. The manure from the feeder hogs is cleaned out of the hooped structure after each turn. The ewes are pastured from the beginning of April to the end of November. When not being pastured, the ewes are confined to a hooped structure with bedded pack. The manure pack from the ewe barn is built up over the winter months when the animals are confined and land applied in the spring. Tom is proposing to build a covered permanent solid manure storage facility to store solid manure scraped from the beef feeder yard weekly and the swine feeder barn after each turn.

Manure Storage Capacity: 240 days

All barns and manure storages are located on the Home Farm.

Existing Barns:

2 Storey Barn	24.4 m x 15.2 m (80 ft x 50 ft); sows and weaners are housed on second level while the beef cattle have access to a portion of the barn on the ground level (18.3 m x 15.2 m (60 ft x 50 ft))
Hoop Structure - Swine Finishers	42.7 m x 12.2 m (140 ft x 40 ft); finisher swine on deep bedded pack, solid pack removed after each turn and to be stored in proposed storage facility
Hoop Structure – Sheep (Ewes)	15.2 m x 6.1 m (50 ft x 20 ft); pastured on Field 1 of the Second Farm from the beginning of May to the end of November. Confined in the hoop structure for the remainder of the year.
Concrete Cattle Yard	18.3 m x 9.1 m (60 ft x 30 ft); manure scraped weekly and transferred to proposed storage facility

Manure Storage:

Existing	
Circular Tank	18.3 m x 3.0 m (60 ft x 10 ft); uncovered circular concrete tank; collection of liquid manure generated by sows and weaners and the runoff produced from the cattle yard
2-Storey Barn Ground Level (Cattle)	18.3 m x 15.2 m (60 ft x 50 ft); approximately 0.60 m (2 ft) of deep bedded pack
Hoop Structure (Swine Finishers)	42.7 m x 12.2 m (140 ft x 40 ft); approximately 0.30 m (1 ft) of deep bedded pack
Hoop Structure (Sheep - Ewes)	12.2 m x 6.1 m (40 ft x 20 ft); approximately 0.30 m (1 ft) of deep bedded pack in hoop structure for sheep
Proposed:	
New Covered Rectangular Solid Storage	18.3 m x 15.2 m x 2.4 m (60 ft x 50 ft by 8 ft); solid manure generated by the beef feeders and swine finishers will be mixed and stored in this structure

Cropping

All lands on the Home Farm are in a five-year rotation of corn, corn, winter wheat, hay, and haylage. At the Second Farm, Field 1 is in permanent pasture and Field 2 is in a five-year rotation of corn, corn, winter wheat, hay, and haylage. Fields on the Third Farm are in a three-year rotation of corn, soybeans, and winter wheat. The soils on all three farms are classed as a Guelph Loam. The regulation requires that all fields be soil sampled at least once every five years when required to prepare a Nutrient Management Plan (NMP). The soil samples must be analyzed by an OMAFRA accredited laboratory. A good soil-sampling program monitors soil nutrient levels and prevents over application of nutrients. Appendix C indicates the soil lab test results for this operation. The Sampling and Analysis Protocol requires a minimum of one soil test per field or section. It is suggested that one soil test be collected for every 10 ha (25 ac).

Verification of actual crop yields is important as the amount of manure that may be applied is partially controlled by the actual yield achieved on a per field basis. Crop rotation records should be maintained, as different crops will result in different rates of manure application.

How does the Nutrient Management Act, 2002, affect this Farm?

Even though Tom isn't increasing his livestock numbers he knows that in order to obtain a building permit for the proposed manure storage facility the operation will need a provincially approved NMS. Tom also needs to determine whether a NMP needs to be prepared for his operation. A NMP will be required when a farm unit has or exceeds 300 Nutrient Units (NU), or if any property included as part of the farm unit is within 100 m (328 ft) of a municipal well.

Livestock	Number	Conversion Factor (animals per Nutrient Unit)	Nutrient Units
Swine			
1. Sows with Litters, non-SEW	11	3.5	3
2. Sows (dry) and Boars, non-SEW	51	3.5	15
3. Weaners, non-SEW	175	20	9
4. Feeders	402	6	67
Beef, Feeders	70	3	23
Sheep, Meat Ewes and Rams (including unweaned offspring)	40	8	5
		Total	122

The number of NU on this farm would not trigger the requirement of preparing an NMP. However, one of the properties included as part of Tom's Farm Unit is located within 100 m (328 ft) of a municipal well. Tom will therefore be required to prepare an NMP but doesn't have to submit this document to OMAFRA for approval.

Implications of the Nutrient Management Strategy and/or Plan - A Summary

An important result of completing the NMS and NMP will be the calculation of the amount of land required for manure application. This calculation will depend on several factors, including:

- the soil fertility levels, determined through soil testing at an OMAFRA accredited lab
- the nutrient content of the manure, determined through testing at an OMAFRA accredited lab or by nutrient databank values
- the crops to be grown in the next five years
- the crops grown in the past year
- the hydrologic soil group and slope of the land
- tillage practices
- the method and timing of manure application
- manure application over the past three years
- proximity to surface water.

Completing the NMS and NMP

Any operation that will generate more than 5 NU and is applying for a building permit for livestock housing and/or manure storage facilities must complete a NMS. The NMS must be approved by OMAFRA before the Chief Building Official (CBO) can issue a building permit. If the land associated with the operation is within 100 m (328 ft) of a municipal well, or if the operation will generate 300 NU or more, the operation must also prepare and follow a NMP. The NMP will not need to be approved but must be kept on file at the farm.

The goal of nutrient management is to balance the amount of nutrients being applied to the land with the amount of nutrients required by the crop. This will be a factor in determining the amount of land required for manure application from the operation. Another benefit of preparing a NMP is it will allow the farmer to determine where the manure nutrients will provide the greatest economic benefit. This is an important consideration when factoring crop input costs into the profitability of a management decision.

Tom has the option to complete the required NMS and NMP by himself or hire a certified consultant to complete one on his behalf. If Tom decides to complete the NMS and NMP himself, he must take a number of courses offered by OMAFRA. For information on these courses call the Nutrient Management Information Line at 1-866-242-4460. Tom decides that hiring a certified consultant will save him both time and money. He contacts several consultants and asks each of them about their experience, cost, the specific services they provide, and ensures that they are certified by OMAFRA. It is still Tom's responsibility to make sure that both the NMS and NMP are implemented appropriately and that annual updates are performed.

Site Characterization

The regulation requires a site characterization study when the farm unit expands to greater than or equal to 300 NU and the solid nutrient storage facility does not have a concrete floor. The site characterization study must be completed by a professional engineer or professional geoscientist. The information determined through the site characterization study will determine what design parameters must be followed for the siting and construction of the new manure storage facility. If the farm unit is less than 300 NU and the operator intends on constructing a solid manure storage with an earthen floor, the producer is required to provide documentation showing there is greater than or equal to 0.5 m of C or D type hydrologic soil group between the floor of the pad and the existing aquifer or bedrock.

Because the proposed manure storage area will have a concrete floor and walls, no site characterization is required.

Manure Storage and Spreading Considerations

Manure Storage Capacity

Tom's intention is to construct the solid manure storage with a minimum of 240 days storage capacity, even though he may be able to manage with less. The construction of this solid storage will not impact the existing storage capacity. The liquid swine manure and beef runoff will still be collected in the circular tank. The sheep pack remains in the barn during the winter months when they are confined.

Manure Application and Analysis

It is a recommended practice that manure samples be collected and analyzed for nutrient content. A good representative sample will allow for the correct nutrient credits to be used for maximum crop growth and prevent over-application of manure and/or commercial fertilizer. Since no manure samples have been collected for this operation, Tom will use the databank values. The nutrient content for the mixed beef and swine manure stored in the proposed storage will be determined using a weighted average. Manure application on this operation will be by liquid tanker and a rear-discharge spreader. Manure is usually incorporated within 48 hours except when applied to fields that are in alfalfa hay and haylage. The NMP will detail the volume and timing of manure applications that may be applied to each field.

Spreading Restrictions

Establishment and maintenance of a vegetated buffer zone or setback along open ditch and creek areas to prevent manure and soil from entering these sensitive areas is a best management practice and a requirement under the regulation. There is a small creek that runs through a number of fields included as part of the farm unit. As set out in the NMS/NMP, specific setbacks must be maintained along these watercourses. Best Management Practices recommend that the size of the setback depends on the field slope beside the watercourse, the soil P concentrations and the method of manure application proposed. The regulatory setback for application of nutrients adjacent to surface water is 13 m (43 ft) from the top of the bank based on Tom's manure application practices.

Buffer Zones

Tom has a small creek that runs through the Home Farm and the Second Farm. The creek's location is illustrated in Appendix A. The regulatory and best management practices setback distances were determined by the NMAN program. A vegetative buffer zone of 3 m (10 ft) must be established next to any surface water that supports aquatic-type plants. This does not, for example, apply to a grassed waterway or a roadside ditch that has no stream. Tom will not spread any manure within the remainder of the setback areas. Establishment and maintenance of appropriate setbacks to wells is also a best management practice and requirement under the regulation.

A drilled well that has a depth greater than 15 m (50 ft) and a watertight casing to 6 m (20 ft) (below ground) exists on the Home Farm. Agricultural source materials (manure, runoff, wash waters) cannot be applied within 15 m (50 ft) of this well. In addition there is a municipal well located within 100 m (328 ft) of a property included as part of the farm unit; therefore a NMP is required to be completed. No nutrients (fertilizer or prescribed materials) may be applied within 100 m (328 ft) of this well.

Spreading restrictions associated with this plan are illustrated in Appendix A.

Tom reviewed the NMP prepared by his consultant and noted some restrictions that will reduce the amount of land available for manure application. The spreading limitations are specific to the features of Tom's fields, the method of manure application and the composition of the manure.

Method of Application

In the past, Tom used his own high-trajectory irrigation gun to spread the manure and runoff was collected in the circular tank. These systems are no longer allowed under the NMA regulation, except in cases where they are used to apply material that is less than 1% dry matter. Tom decides to retire the high-trajectory irrigation gun and instead purchase a drag-hose system in order for him to continue to use his existing equipment which in turn reduces the cost of going to an entirely new application method. He plans to continue to use a rear-discharge solid manure spreader for the manure from the bedded packs.

Municipal Requirements

Tom's next step is to meet with a municipal building inspector to discuss his building plans. At the meeting he learns that a number of items will be required before obtaining a building permit:

A. minimum distance separation requirements
B. siting restrictions for surface water protection
C. engineered plans and construction supervision

A. Minimum Distance Separation (MDS)

MDS is not a requirement of the NMA. However, as in most municipalities in Ontario, the local zoning bylaw requires the new barn to be sited according to the minimum distance separation formula. The municipal officials complete the calculations, based on the information Tom supplies, and find that the separation distances will be sufficient.

To satisfy municipal requirements, the new storage must be kept to a minimum of 174 m (572 ft) from the nearest neighbour's dwelling.

B. Siting Restrictions for Surface Water Protection

According to the NMA, a minimum distance must be maintained between the manure storage facility and various water sources.

Minimum Distance Between the Permanent Manure Storage and:	Distance (metres)
A drilled well (see definition of drilled well on page 12)	15
A municipal well	100
Other wells (dug, bored)	30 (90 if the facility will store non-agricultural source materials)
Surface water	50 (as measured along the flow path*)
Field drainage tiles	15
Tile inlets	50 (as measured along the flow path)
A flood plain	No construction of a permanent nutrient storage within the 100-year flood line**

** A flow path does not have to be in a straight line. It is the distance that liquid must travel before reaching surface water.*
*** Unless a permit has been obtained under Section 28 of the Conservation Authorities Act*

C. Engineered Plans and Construction Supervision

To obtain his building permit, Tom must provide a set of engineered building plans. He is supplied the plans from the engineer hired to design and oversee the construction of the new storage facility. Tom and the engineer will need to ensure that the building project meets the requirements set out in Part 8 of Ontario Regulation 267/03, as amended. Tom will be required to include a signed Engineer's Commitment Certificate when submitting the NMS for approval.

Conclusion

Having gone through the nutrient management exercise, Tom is more aware of the proper way to store and manage his manure. This will help him to maximize the agronomic and economic value of the manure produced on this operation. Tom understands that regardless of who completes the NMS and NMP, as the farm operator, he is responsible for implementation of the strategy and plan, and for monitoring of all activity. In addition Tom is also required to conduct an annual review of his NMS and NMP and keep a record of any changes.

Selections of the most common forms that are part of a NMS and NMP are included in the Appendices. Appendices A and B are concept sketches of a Farm Unit Sketch and a Field Sketch. The sketches do not show all of the details that may be required for an approved sketch. Specific details required in a sketch can be found in the Nutrient Management Regulation 267/03, as amended, and the associated Nutrient Management Protocol, Parts 5 and 7. These items are also available at **www.omafra.gov.on.ca**. The following outlines the items that may or may not be needed to complete the sketches.

Refer to O. Reg. 267/03, as amended, and the associated Protocols to determine your sketch requirements.

Farmstead Sketch

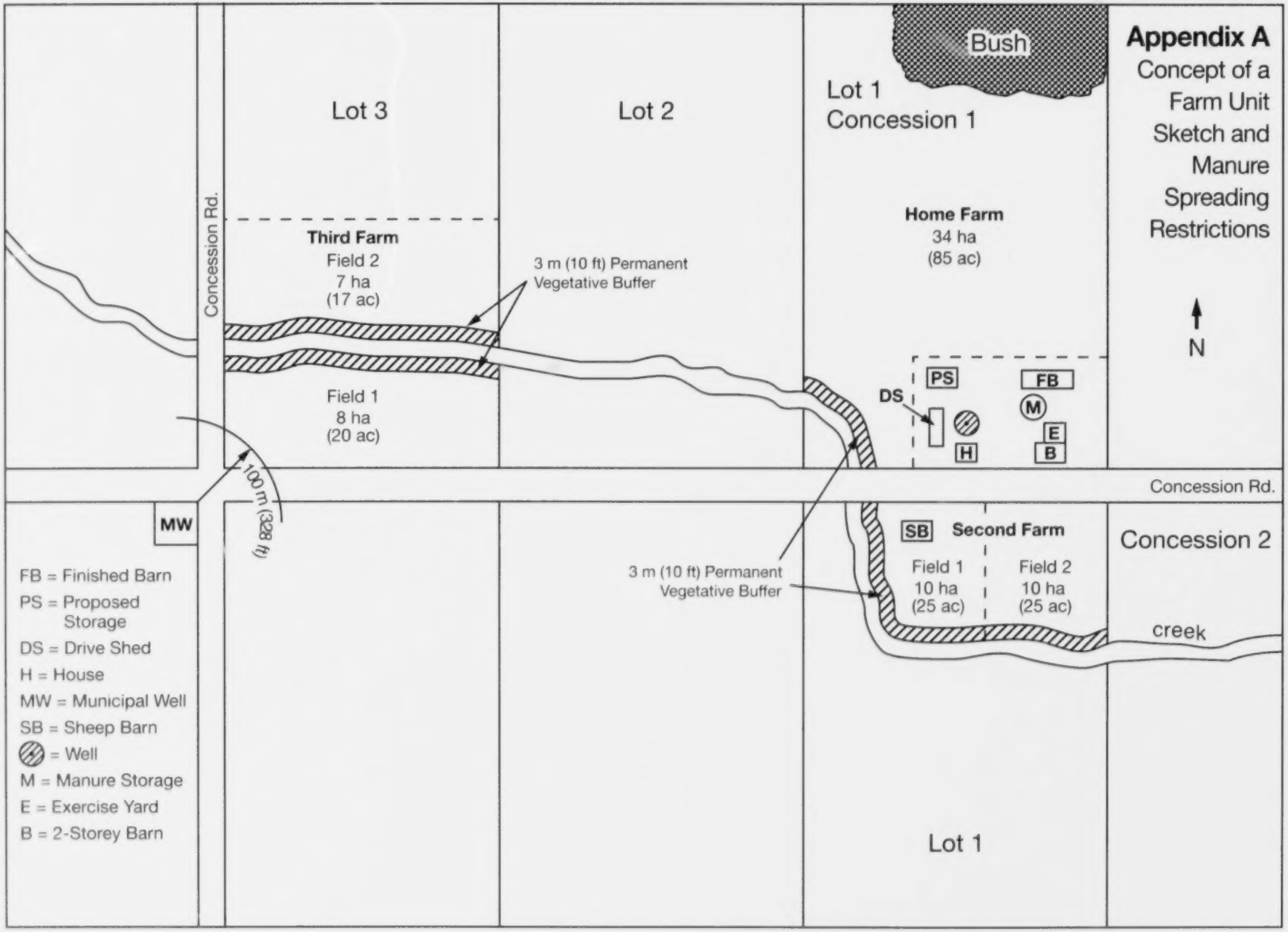
1. North direction arrow
2. Property identifier
3. Label whether the land is owned, controlled (rented or leased) or if there is an application agreement
4. Road names, municipal boundaries, neighbours and other local features
5. Permanent, temporary and proposed generating facilities
6. Permanent, temporary and proposed storage facilities and sites
7. Dimensions of all generating and storage facilities and sites
8. Distance between facilities and lot lines
9. Location of flow paths and physical barriers*
10. Location of wells (includes gas, oil, test and water wells)
11. Location of municipal wells
12. Location of tile inlets
13. Location of surface water
14. Location of other non-agricultural land uses

** Including these items as part of a sketch may facilitate the approval of your application by providing details required as part of compliance with O. Reg. 267/03, as amended.*

Field Sketch

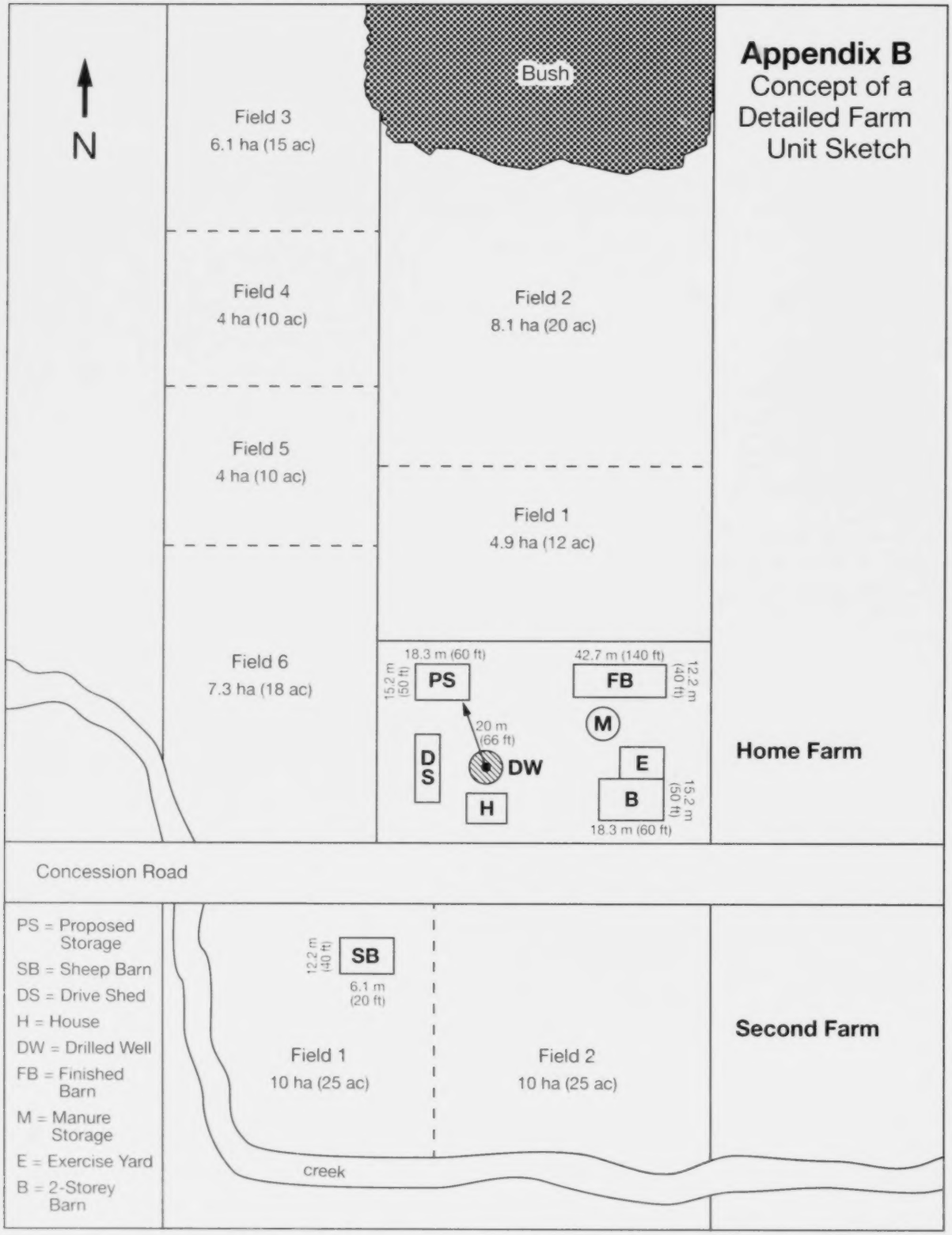
1. Field identifier (from Farm Unit declaration)
2. Section within a field that has more than one section
3. Identify whether tile drains exist
4. Location of tile inlets*
5. Location of tile outlets*
6. Location of surface water within 150 m (492 ft) of the field*
7. Location of non-agricultural land uses
8. Location of municipal wells within 100 m (328 ft) of a field boundary
9. Location of all other known wells within 90 m (295 ft) of the field boundary if the field is receiving biosolids
10. Location of all other known wells within 30 m (98 ft) of the field boundary if the field is only receiving agricultural source material
11. Setback distances required from all wells*
12. Minimum depth to saturated soil conditions
13. Maximum sustained field slope*
14. Maximum sustained field slopes within 150 m (492 ft) of the top of the bank of all surface water
15. Setback distances required from surface water established by the minimum separation distance and/or the phosphorus index
16. Location of all permanently vegetated buffer zones*

* *Including these items as part of a sketch may facilitate the approval of your application by providing details required as part of compliance with O. Reg. 267/03, as amended.*



Appendices A and B are concept sketches. The drawings do not show all of the details which may be required for an approved sketch. Specific details required in a sketch can be found in the Nutrient Management Regulation 267/03, as amended and the associated Nutrient Management Protocol, Parts 5 and 7. These items are available at **www.omafra.gov.on.ca**.

Appendix B - Concept of a Detailed Farm Unit Sketch



Appendix B
Concept of a Detailed Farm Unit Sketch

Appendices A and B are concept sketches. The drawings do not show all of the details which may be required for an approved sketch. Specific details required in a sketch can be found in the Nutrient Management Regulation 267/03, as amended and the associated Nutrient Management Protocol, Parts 5 and 7. These items are available at **www.omafra.gov.on.ca**.

Soil-Ag
Lab Services
(An OMAFRA Accredited Lab)

Unit A - 10 Dirt Street
HOMETOWN, Ontario A0A 0A0

Soil Test Report

Date Submitted: May 20, 2005.
Report Date: June 1, 2005.

Customer	*Sample ID*	*Lab#*	*pH*	*BpH*	*Organic Matter %*	*NO_3-N (ppm)*	*$NaHCO_3$ Test Phosphorus (ppm)*	*Potassium (K) (ppm)*	*Magnesium (ppm)*	*Calcium (ppm)*
Home Field 1	1043	6.5			3.3		30	208	121	
Home Field 2	1044	7.2			3.4		38	205	112	
Home Field 3	1045	6.8			3.0		41	216	124	
Home Field 4	1046	6.9			3.4		33	198	131	
Home Field 5	1047	7.1			3.4		39	209	113	
Home Field 6	1048	7.0			3.2		41	202	129	
Second Farm Field 1	1049	6.8			3.0		32	195	115	
Second Farm Field 2	1050	7.2			3.1		32	218	135	
Third Farm Field 1	1051	7.4			3.3		34	214	119	
Third Farm Field 2	1052	7.0			3.0		45	198	125	

Appendix D - Manure Contingency Plan (Sample) - Tom Bruce Farms, 2006

EMERGENCY CONTACT TELEPHONE NUMBERS

Spills Action Centre	1-800-268-6060
Ministry of the Environment (Local Office)	1-222-333-4444
Backhoe Operator: Excavations Inc.	1-222-333-4444
Dump Truck Operator: Dumptrucks Ltd.	1-222-333-4444

On-Site Emergency Equipment

Solid manure spreader • Tractor • Skidsteer loader

This contingency plan sets out possible actions that can be taken in the event that this Nutrient Management Strategy and Plan cannot be followed.

More Nutrient Than The Nutrient Management Strategy Or Plan Have Addressed

If the application rates for nutrients in a NMP are not at the maximum, the nutrient management plan can be reviewed to ascertain whether the application rate and possibly the frequency of application can be increased for certain parts of the land. Any changes made to the plan must be recorded to reflect the actual amount of nutrient applied. In some cases, this may mean an update of the NMP is necessary.

If the application rates for nutrients in a nutrient management plan are at the maximum, the operator must be prepared to set up alternate uses for the nutrients. Some possibilities include:

- finding a broker who can take the excess nutrient
  (a Broker Agreement would be required under such circumstances)
- finding an intermediate generator who will accept the excess nutrient
  (a Nutrient Transfer Agreement would be required under such circumstances)
- acquiring more land through ownership, control or other arrangements

More Nutrient Than The Storage Design Capacity

In some cases, generally due to adverse weather conditions, the storage may not be sufficient to store all manure produced.

To overcome this problem, the preferred solution would be to land-apply the manure where doing so will not result in an adverse effect.

Options

- Alter your NMP if the application rates are not already at the maximum and renew if required by the regulation.
- Transfer the nutrient to an available storage facility with excess capacity (a Nutrient Transfer Agreement may be required).
- Work with your broker to take the excess.
- Obtain access to more land through ownership or by means of an Application Agreement or land rental.
- Transfer to another farm or farm unit, and document appropriately.
- Utilize temporary in-field storage.
- Use in-barn storage between crop clean outs to extend the capacity of the storage.

Weather Or Equipment Conditions Impeding Planned Storage Or Application

Manure Application Change

- When the timing of a manure application must be changed, adjust the nutrient amounts to reflect the change in application timing.
- In making such changes, you must not exceed the maximum annual nutrient application rate or the maximum rate per application.
- The application rate must comply with the requirements of the regulation.
- Adjust subsequent applications of nutrients to accommodate the change in timing of the nutrient application and record the change in your NMP.

Crop Change

- Nutrient amounts and formulation should be adjusted (where possible) to account for a change in designated crop.
- If the nutrients have already been applied, the amount and formulation should be adjusted for the next crop to be grown, where possible, to account for the previous crop change.

Commercial Fertilizer Material or Analysis Change

- Where the nutrient composition that is listed in the NMP is altered, the altered material or analysis should be reflected in the NMP plan.
- Subsequent nutrient applications should reflect these changes to the original NMP.

Agricultural Operations: Unanticipated Release Of Nutrients

These are important issues to be dealt with in a contingency plan due to the adverse effects that can occur. The contingency plan must outline the required equipment, contacts and safety precautions. The idea is to minimize the potential for a spill and if one does occur to ensure that the operator and the employees know what actions to implement.

To Avoid A Spill You Should

- Calibrate your manure application equipment to apply at rates indicated in your NMP.
- Avoid spreading solid manure closer to a watercourse than indicated by your NMP.
- Do not apply manure on steep slopes and avoid spreading on snow or prior to rainfall.
- Do not apply manure within 30 m (100 ft) of a dug well or within 15 m (50 ft) of a drilled well.

If A Spill Does Occur

- Immediately rectify cause of spill.
- Contain the material to minimize opportunity for material to move off site.
- Notify the Spills Action Centre.
- Clean up the spill and land apply the material in accordance with the NMP or return the material to storage.
- Re-evaluate manure handling procedures and the effectiveness of the contingency plan.

Appendix E - Farm Unit Declaration Form

Ontario Ministry of Agriculture, Food and Rural Affairs

Farm Unit Declaration Form

1. General Information

A Farm Unit as defined by the *Nutrient Management Act, 2002*, Ontario Regulation 267/03 (as amended) is the basis for a Nutrient Management Strategy and/or Nutrient Management Plan.

For each Farm Unit there is only one Nutrient Management Strategy and one Nutrient Management Plan.

The Farm Unit must include all land on the property where the nutrients are generated.

The Farm Unit may include other properties.

2. Contact Information

Name of Farm Unit Operator

Legal Farm Name

911 Address *(Street No., Street Name, RR, Lot, Concession, Township)*

City/Town/Village	*Province*	*Postal Code*
	Ontario	

Telephone No. *Home (incl. Area code)*	Telephone No. *Business (incl. Area code and ext.)*
E-mail address	Operation Identifier *(if previously assigned by Ministry)*

3. Declaration

As the farm unit operator I declare that the facilities and property referred to in Table 1 comprise the entirety of this Farm Unit. I acknowledge the requirement to complete a Nutrient Management Plan and/or Strategy, and that such Nutrient Management Plan and/or Strategy shall include all of the lands identified on this form.

I hereby warrant that the information contained on this form is true, and that I have authority to complete this document.

Indicate the type of operation that this Farm Unit is in: *(check ☒ one only)*

☐ Corporation *(specify name below)*

☐ Division of a Corporation *(specify name below)*

Name of Corporation ***or*** Division of Corporation

☐ Partnership *(specify names and addresses of Partners below)*

☐ Sole Proprietorship *(specify name and address of Owner below)*

Names and Addresses of Partners ***or*** Name and Address of Owner

Name of Farm Unit Operator *(please print)*	Signature	Date *(yyyy/mm/dd)*
Name of Witness *(please print)*	Signature	Date *(yyyy/mm/dd)*

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Table 1 Location and Identification of Land that is Part of this Farm Unit

Give each farm a unique name that will also be used in the Nutrient Management Plan for this Farm Unit. Be sure to list all roll numbers, concessions and lots that are related to this Farm Unit.

☐ As seen in NMAN

Farm Name	911 Address	Roll Number	Upper Tier *(county)*	Lower Tier *(township)*	Geo Township *(former township)*	Concession	Lot	Tillable Area *(include units ha or ac)*	Generator or Receiver *(check ☒ any that apply)*	Status *(check ☒ one)*
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement
									☐ Generator ☐ Receiver	☐ Owned ☐ Rented ☐ Agreement

☐ Additional land listings are attached.

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Ontario Ministry of Agriculture, Food and Rural Affairs

Nutrient Management Strategy Application Form

A. General Information

This form is for those applicants that choose NOT to use the NMAN software to prepare the Nutrient Management Strategy they are required to submit to the Province of Ontario. Please ensure you read all the material. Once completed and signed, this is a legal document that you have certified to be correct. This form, once completed with the required attachments, will constitute the Nutrient Management Strategy. It is your responsibility to review/follow Ontario Regulation 267/03, as amended. The Reviewer's Checklist is a good reference tool when completing your application.

- Please ensure to retain a copy of your completed NM Strategy (and NM Plan, if applicable) for your records. Please note, approved documents will not be returned. It is your responsibility to keep copies of the documents that comprise your approved NMS.
- You will be contacted by OMAFRA staff if you are required to provide additional information during the review process.
- Upon approval, your NM Strategy is valid for a period of 5 years. At that time, you are not required to resubmit, but are required to update the NM Strategy and to keep it on file and available for inspection, if requested.

B. Application Status

Please check ☒ which of the following applies:

☐ This NMS is being submitted for approval.

☐ This NMS is being submitted as part of the submitter's certification requirements.

C. Operation Information

1. Farm Unit Operator

Name of Farm Unit Operator

Legal Farm Name

Address

See Farm Unit Declaration Form (attached)

2. Certified Nutrient Management Planner

Name of Certified Nutrient Management Planner

Certification Number

Telephone No. *(incl. Area code)*	E-mail Address

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Ontario Ministry of Agriculture, Food and Rural Affairs

Nutrient Management Strategy Application Form

Section 1 Overview of the Operation

Please provide a description of the operation including the following:

1. Reason for submission (expanding operation, new operation, planned changes).
2. Type and size of operation.
3. Overview of livestock/poultry facilities and practices that impact nutrient management, e.g. all in/all out; feed additives used.
4. Prescribed material produced or received, including all Non-agricultural source material (NASM).
5. Overview of cropping and management practices.

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Nutrient Management Strategy Application Form

Section 2 Farm Unit Declaration

1. Please attach the Farm Unit Declaration form.
2. For corporations, please attach a copy of the first page of your Articles of Incorporation showing the incorporation number. If there has been a name and/or address change please attach MCBS Schedule A (part of the T23 Corporate Tax and Annual Return). These documents will be used for verification of the recorded name and address.

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Nutrient Management Strategy Application Form

Section 3 Farm Unit and Farmstead Sketches

Map of Farm Unit Properties *(attach clearly labelled map)*

(The Farm Unit map may be a photocopy of a map of the area representing all properties, computer generated or hand drawn. More than one map may be required to include all properties. Please ensure all features listed below are shown. The map should be readable and include a north arrow.)

- Location of the entire land base declared in the Farm Unit:
  1. Land owned or controlled (rented or leased) or otherwise forms part of the Farm Unit;
  2. Road names, municipal boundaries.

Farmstead Sketch *(attach clearly labelled sketch)*

(The farmstead sketch(s) may be an aerial photo, computer generated or hand drawn and must include/address the following items, either by including them on the sketch, or indicating on the sketch that they do not exist. Sketch should be readable and include north arrow.)

- Location of generation facilities and storage(s):
  1. Permanent, temporary and proposed generating facilities;
  2. Permanent, temporary and proposed storage facilities and sites;
  3. Dimensions of all generating and storage facilities and sites.
- Distance from sensitive features to the nearest permanent nutrient storage/generating facility, including:
  1. Known wells (includes gas, oil, test and water wells);
  2. Municipal wells;
  3. Tile inlets;
  4. Surface water (as defined in Part I of O.Reg. 267/03).
- For nutrient storage within 50 metres of surface water, show a Flow Path of at least 50 metres to surface water or tile inlet.

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Nutrient Management Strategy Application Form

Section 4 Volume of Prescribed Material Produced Annually

Please provide a detailed description of the prescribed material produced and/or transferred into the Farm Unit in Table 4.1 and 4.2. *(Must include all prescribed materials generated in and transferred into this Farm Unit).*

1. Ensure all liquid systems, washwater, runoff from scrape alleys and paved yards or roofs are included in total volume of liquid prescribed material for this operation.
2. Ensure additional bedding is included in the total volume of solid prescribed material for this operation.
3. Ensure any runoff from solid storages is accounted for.
4. If livestock weight is lower than the value in Table 3.1 of the Nutrient Management Protocol incorporated into O.Reg. 267/03, as amended, a comprehensive detailed explanation must be attached.
5. For manure storage calculations:
   a. **New or expanding facilities** – the number of farm animals must be equal to or greater than the number determined using the Housing Capacity Guidelines (provided in O.Reg. 267/03 Table 3.1) or documentation must be included indicating that the maximum housing capacity of the barn is less than the Housing Capacity Guidelines.
   b. **Existing facilities** – the manure storage calculations are based on actual usage of the facility.
   c. In all cases, a comprehensive, written explanation must be included if the declared housing usage is less than the maximum housing capacity of the barn.
6. Attach and clearly label detailed volume calculation of prescribed materials.

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TABLE 4.1 Description of Generating Facilities that are Part of this Operation

Number of Livestock for Each Generating Facility included as Part of the Operation

Complete the information below using the three (3) livestock categories listed in the Reference Table for Determining the Number of Nutrient Units per Livestock Type found on page 17.

Farm Name as Recorded in the Farm Unit Declaration	Type of Livestock	Subtype	Sub-subtype	Number of Livestock	Nutrient Units	Storage System Number *(from Table 5.1)*	Annual Agricultural Source Material Production *(per Storage System)*	Agricultural Source Material Production Units
1.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons
2.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons
3.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons
4.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons
5.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons
6.								☐ Litres ☐ Tonnes ☐ Gallons (Imp.) ☐ Tons

☐ Additional generating facilities listings are attached.

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Table 4.2 Location and Identification of Incoming Prescribed Material Transfers

☐ No incoming transfers; all prescribed material is generated on this Farm Unit *(check ☒ if applicable)*

Name of Generator *(record operation identifier if applicable)*	**Roll Number**	**Upper Tier** *(county)*	**Lower Tier** *(township)*	**Geo Township** *(former township)*	**Concession**	**Lot**	**Type of Agricultural Source Material** *(e.g. solid dairy manure)*	**Date** *(yyyy/mm/dd)*	**Amount of Material** *(provide units of measure)*

☐ Additional incoming transfer listings are attached.

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Nutrient Management Strategy Application Form

Section 5 Storage Facilities

1. Ensure storage location and dimensions are included in the Farmstead Sketch.
2. Ensure liquid storage has 0.30 metres minimum freeboard, or 0.15 metres if storage has a non-slatted floor ***and*** is permanently covered.
3. If runoff management is required for one or more solid storage facilities, complete and attach the ***Runoff Management Checklist*** *available at www.omafra.gov.on.ca* .
4. If temporary storage is required, complete and attach ***Temporary Storage Checklist*** *available at www.omafra.gov.on.ca* .
5. For new and expanding prescribed material storage facilities, attach an ***Engineer's Commitment Certificate***. The *Engineer's Commitment Certificate* is ***not*** required for a permanent, solid nutrient storage facility that has (O.Reg. 267/03, Section 62):
   a. a volume less than 600 cubic metres ;
   b. a surface area less than 600 square metres; ***and***
   c. walls that do not have an exposed height of more than 1 metre.
6. Document the number of days of storage for each storage facility identified in Table 5.1.
7. Attach and clearly label the calculations of the days of storage for each storage system listed in Tables 4.1 and 5.1.
8. If the number of days of storage is less than 240, attach a detailed description showing how the prescribed materials will be managed within the storage capacity of the operation.
9. The prescribed materials generated in the NM Strategy must be accounted for in the NM Plan.

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Table 5.1 Description of Storage Facilities that are Part of this Farm Unit

Name of Facility	Type of Facility	Type of Storage *(check ☒ one)*	Dimensions *(include units of dimension in feet or metres)*	Storage Covered *(check ☒ one)*	Agricultural Source Material Type *(check ☒ one)*	Storage System Number *(transfer to Table 4.1)*	Days of Storage *(per Storage System)*
1.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
2.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
3.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
4.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
5.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
6.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		
7.	☐ Existing ☐ Proposed	☐ Concrete ☐ Earthen ☐ Steel ☐ Temporary		☐ Yes ☐ No	☐ Solid ☐ Liquid		

☐ Additional storage facilities listings are attached.

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Nutrient Management Strategy Application Form

Section 6 Nutrient Content of Prescribed Materials

Complete Table 6.1 on the following page, including the following information:

1. List the nutrient values (ammonia and ammonium nitrogen, total kjeldahl nitrogen, total phosphorous, total potassium and total solids) for the prescribed materials generated or received as part of this operation.
2. If databank nutrient content was used, the dry matter must correspond to the predicted dry matter range in Appendix 1 of the Nutrient Management Protocol.
3. If nutrient analysis is used, attach and clearly label the test results. If the test results vary from those provided in Appendix 1 of the Nutrient Management Protocol, attach an explanation.
4. For blended manures, attach detailed calculations of nutrient and dry matter content.
5. Attach other information, e.g. verification of use and influence of feed additives (if used), separator or digester used.

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Table 6.1 Nutrient Content of Prescribed Materials

Prescribed Material (describe related to storage or transfer-in identified in Table 4.2)	Nutrient Content					Check ☒ method for determining nutrient values	
	Ammonium – N (NH4-N)	Total Kjeldahl Nitrogen (TKN)	Total Phosphorus (P)	Total Potassium (K)	Total Solids (dry matter)	Data-Bank *(check ☒ one)*	Lab Analysis (attach copy) *(check ☒ one)*
1. *e.g.* Liquid Heifer Manure (values reported as % of fresh weight)	700 ppm	1.2%	0.23%	1.5%	1.8%	☐ Yes ☐ No	☐ Yes ☐ No
1.						☐ Yes ☐ No	☐ Yes ☐ No
2.						☐ Yes ☐ No	☐ Yes ☐ No
3.						☐ Yes ☐ No	☐ Yes ☐ No
4.						☐ Yes ☐ No	☐ Yes ☐ No
5.						☐ Yes ☐ No	☐ Yes ☐ No
6.						☐ Yes ☐ No	☐ Yes ☐ No

☐ Additional storage facilities listings are attached.

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Nutrient Management Strategy Application Form

Section 7 Destination of Prescribed Materials

For all prescribed materials generated on the Farm Unit or other operation, a detailed, written description of their intended destination is required. Please fill out Table 7.1. Indicate the percentage of prescribed materials being land applied in the Farm Unit and transferred off the Farm Unit for each manure system for each of five (5) years.

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Table 7.1 Destination of Prescribed Materials

Prescribed Material (describe related to storage or transfer-in identified in Table 4.2)	Year	Source (check ☒ one)	Type	Amount (Include Units of Measure)	Days of Storage	Destination
1. *e.g.* Hog Feeder Storage	2006	☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation	Swine	900,000 gallons	240	This Farm Unit % Transferred %
1.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
2.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
3.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
4.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
5.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
6.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
7.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %
8.		☐ This Farm Unit ☐ Another Ag Operation ☐ Non-Ag Operation				This Farm Unit % Transferred %

☐ Additional storage facilities listings are attached.

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Nutrient Management Strategy Application Form

Section 8 Transfer of Prescribed Materials

1. **For transfer of prescribed materials out of the Farm Unit, please provide the following in Table 8.1:**
   1. Type of transfer (broker, NMA transfer, non-NMA transfer).
   2. Name of receiver.
   3. Location.
   4. Volume of prescribed materials being transferred.
   5. Tillable acres available for the prescribed material.
   6. Date of transfer.
2. **Attach any necessary transfer or broker agreements as per O. Reg. 267/03. s.20, s.36, s. 37.**

   To ensure your contract meets your commercial needs outside of the regulatory requirements, you should seek legal advice.

   Transfer Agreements must identify:
   1. the person who owns or controls the operation **from** which the materials are to be transferred;
   2. the person who owns or controls the operation **to** which the materials are to be transferred;
   3. the type of material to be transferred;
   4. the quantity of material to be transferred;
   5. the proposed date of transfer; and
   6. the operation identifiers of both the receiving and generating operations, if assigned.

   Broker agreements with generators must identify:
   1. the type of prescribed material to be received;
   2. the quantity of prescribed material to be received;
   3. the projected date of receipt;
   4. a description of the operation in which the prescribed material was generated;
   5. the operation identifier for the operation in which the material was generated or for the farm unit where the operation is carried out, if assigned.

   The broker shall retain the above records for four years after the date of receiving the prescribed materials.

   Broker agreements with receivers must identify:
   1. the type of prescribed material to be transferred;
   2. the quantity of prescribed material to be transferred;
   3. the proposed date of transfer;
   4. a description of the operation to which the prescribed material was transferred;
   5. the operation identifier for the operation or for the farm unit where the operation is carried out, if assigned.

   The broker shall retain the above records for four years after the date of transferring the prescribed materials.

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Table 8.1 Location and Identification of Outgoing Prescribed Material Transfers

☐ No outgoing transfers: all prescribed material is applied on this Farm Unit *(check ☒ if applicable)*

Type of Transfer *(check ☒ one)*	Name of Receiver	911 Address	Roll Number	Upper Tier *(county)*	Lower Tier *(township)*	Geo Township *(former township)*	Conc.	Lot	Telephone *(incl. Area code)*	Tillable Acres	Date *(yyyy/mm/dd)*	Amount of Agricultural Source Material *(provide units of measure)*
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												
☐ Broker ☐ NMA Transfer ☐ Non-NMA Transfer												

☐ Additional outgoing transfer listings are attached.

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Nutrient Management Strategy Application Form

Section 9 Contingency Plan

Does this operation have a written Contingency Plan that includes all of the items listed below?

☐ Yes ☐ No

The Contingency Plan must address all of the following in the event unforeseen circumstances occur:

1. The names and contact numbers for people who are authorized to make decisions for the operation in an emergency.
2. When more nutrients are generated and/or received than planned.
3. When storage is reaching capacity sooner than planned.
4. Unanticipated release of nutrients (e.g. spills, breaks in equipment or storage, etc.). List the phone numbers for **MOE Spills Action Centre (1 800 268-6060)**, local municipalities, emergency assistance and the names and phone numbers of neighbours and heavy equipment operators to contact.

   Indicate how you will:

   - Avoid a spill
   - Stop a spill
   - Contain a spill
5. When weather conditions and/or equipment conditions and availability prevent planned storage or field application.

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Appendix F - Nutrient Management Strategy Application Form

Reference Table for Determining the Number of Nutrient Units per Livestock Type

Type of Livestock			
Type	**Subtype**	**Sub-subtype**	**Nutrient Units (animals/NU)**
Beef	Backgrounders (7–12.5 months)	Confinement	3
Beef	Backgrounders (7–12.5 months)	Yard/Barn	3
Beef	Cows (includes calves to weaning)	Confinement	1
Beef	Cows (includes calves to weaning)	Deep Bedded	1
Beef	Cows (includes calves to weaning)	Yard/Barn	1
Beef	Feeders (7–16 months)	Confinement	3
Beef	Feeders (7–16 months)	Confinement Bedded Pack	3
Beef	Feeders (7–16 months)	Confinement Total Slats	3
Beef	Feeders (7–16 months)	Yard/Barn	3
Beef	Short Keep (12.5–17.5 months)	Confinement	2
Chickens	Broiler Breeder Growers (females + males transferred out)	Floor System	300
Chickens	Broiler Breeder Layer (females + males transferred in)	Cages	100
Chickens	Broiler Breeder Layer (females + males transferred in)	Litter With Slats	100
Chickens	Broilers	8-Week Cycle	351
Chickens	Broilers	9-Week Cycle	300
Chickens	Broilers	10-Week Cycle	250
Chickens	Broilers	12-Week Cycle	199
Chickens	Layer Pullets (day-olds)	Cages	500
Chickens	Layer Pullets (day-olds)	Litter	500
Chickens	Laying Hens	Belt And Other Removal System (daily)	150
Chickens	Laying Hens	Belt With Air Drying (daily)	150
Chickens	Laying Hens	High Rise – Stored In Barn	150
Chickens	Laying Hens	Liquid – Stored In Barn	150
Chinchilla	Breeding Females (incl. males/rep/market animals)		320
Dairy	Calves Large-Frame		6
Dairy	Calves Medium-Frame (Guernsey size)		7
Dairy	Calves Small-Frame (Jersey size)		8.5
Dairy	Heifers Large-Frame	Deep Bedded	2
Dairy	Heifers Large-Frame	Free-Stall	2
Dairy	Heifers Large-Frame	Manure Pack Outside Access	2
Dairy	Heifers Large-Frame	Pack Scrape 1 Side	2
Dairy	Heifers Large-Frame	Pack Scrape 2 Sides	2
Dairy	Heifers Medium-Frame (Guernsey size)	Deep Bedded	2.4
Dairy	Heifers Medium-Frame (Guernsey size)	Free-Stall	2.4
Dairy	Heifers Medium-Frame (Guernsey size)	Pack Scrape	2.4
Dairy	Heifers Small-Frame (Jersey size)	Deep Bedded	2.9
Dairy	Heifers Small-Frame (Jersey size)	Free-Stall	2.9
Dairy	Heifers Small-Frame (Jersey size)	Pack Scrape	2.9

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Reference Table for Determining the Number of Nutrient Units per Livestock Type - continued

Type of Livestock			
Type	**Subtype**	**Sub-subtype**	**Nutrient Units (animals/NU)**
Dairy	Milking Age Cows Large-Frame	4-Row Free-Stall Head-To-Head	0.7
Dairy	Milking Age Cows Large-Frame	4-Row Free-Stall Tail-To-Tail	0.7
Dairy	Milking Age Cows Large-Frame	6-Row Free-Stall	0.7
Dairy	Milking Age Cows Large-Frame	Bedded Pack	0.7
Dairy	Milking Age Cows Large-Frame	3-Row Free-Stall	0.7
Dairy	Milking Age Cows Large-Frame	Sand	0.7
Dairy	Milking Age Cows Large-Frame	Tie-Stall	0.7
Dairy	Milking Age Cows Medium-Frame (Guernsey size)	Bedded Pack	0.85
Dairy	Milking Age Cows Medium-Frame (Guernsey size)	Free-Stall	0.85
Dairy	Milking Age Cows Medium-Frame (Guernsey size)	Tie-Stall	0.85
Dairy	Milking Age Cows Small-Frame (Jersey size)	Bedded Pack	1
Dairy	Milking Age Cows Small-Frame (Jersey size)	Free-Stall	1
Dairy	Milking Age Cows Small-Frame (Jersey size)	Tie-Stall	1
Deer/Elk	Elk Adults (>24 months) (includes unweaned offspring)		2
Deer/Elk	Elk Feeders		6
Deer/Elk	Elk/Red Deer Hybrid Adults (includes unweaned offspring)		4
Deer/Elk	Elk/Red Deer Hybrid Feeders		10
Deer/Elk	Fallow Deer Adults (>24 months) (includes unweaned offspring)		13
Deer/Elk	Fallow Deer Feeders		23
Deer/Elk	Red Deer Adults (>24 months) (includes unweaned offspring)		7
Deer/Elk	Red Deer Feeders		14
Deer/Elk	White-Tailed Deer Adults (>24 months) (includes unweaned offspring)		11
Deer/Elk	White-Tailed Deer Feeders		21
Ducks	Peking	Breeders	105
Ducks	Peking	Growers	105
Emu	Adults (includes offspring to market size)		12
Fox	Breeding Females (includes rep/market animals/males)		25
Goats	Dairy Does (including unweaned offspring)	Confinement	8
Goats	Dairy Kids	Confinement	
Goats	Feeder Kids (>20 kg)	Confinement	
Goats	Mature Meat Goat (including unweaned offspring)		8

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Reference Table for Determining the Number of Nutrient Units per Livestock Type - continued

Type of Livestock			
Type	**Subtype**	**Sub-subtype**	**Nutrient Units (animals/NU)**
Horses	Large-Frame (including unweaned offspring)	Box Stalls	0.7
Horses	Medium-Frame (including unweaned offspring)	Box Stalls	1
Horses	Small-Frame (including unweaned offspring)	Box Stalls	2
Mink	Breeding Females (includes rep/market animals/males)		90
Ostrich	Adults (includes offspring to market size)		4
Rabbits	Breeding Does (includes bucks/rep/fryers)	1-Tier Cages	40
Rabbits	Breeding Does (includes bucks/rep/fryers)	2-Tier Cages	40
Rabbits	Breeding Does (includes bucks/rep/fryers)	3-Tier Cages	40
Sheep	Dairy and Feeder Lambs	Confinement	20
Sheep	Dairy and Feeder Lambs	Outside Access	20
Sheep	Dairy Ewes and Rams (including unweaned offspring and replacements)	Confinement	6
Sheep	Meat Ewes and Rams (including unweaned offspring and replacements)	Confinement	8
Sheep	Meat Ewes and Rams (including unweaned offspring and replacements)	Outside Access	0
Swine	Feeders	Full Slats	6
Swine	Feeders	Full Slats (wet/dry feeders)	6
Swine	Feeders	Deep Bedded	6
Swine	Feeders	Partial Slats	6
Swine	Feeders	Partial Slats (wet/dry feeders)	6
Swine	Feeders	Solid Scrape	6
Swine	Gilts – Breeders		5
Swine	Sows (dry) (AI)	non-SEW	3.64
Swine	Sows (dry) and Boars	non-SEW	3.5
Swine	Sows (dry) and Boars	SEW	3.33
Swine	Sows with Litters	non-SEW	3.5
Swine	Sows with Litters	SEW	3.33
Swine	Sows, boars, and litters	SEW	3.5
Swine	Weaners	non-SEW	20
Swine	Weaners	non-SEW (wet/dry)	20
Swine	Weaners	SEW	20
Swine	Weaners	SEW (wet/dry)	20

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Reference Table for Determining the Number of Nutrient Units per Livestock Type - continued

Type of Livestock			
Type	**Subtype**	**Sub-subtype**	**Nutrient Units (animals/NU)**
Turkeys	Breeder Toms		0
Turkeys	Broilers <6.2kg		133
Turkeys	Hens 6.2–10.8 kg		107
Turkeys	Toms >10.8 kg		76
Turkeys	Turkey Breeder Layers		0
Turkeys	Turkey Pullet (0–6 weeks)		267
Veal	Grain-Fed Veal		6
Veal	Milk-Fed Veal		6

NOTE:

For animals not listed in the table above, the number of animals per nutrient unit can be calculated by determining the number of animals that will produce the amount of nutrients that give the fertilizer replacement value of the lower of 43 kilograms of nitrogen or 55 kilograms of phosphate as nutrient. Consult with Ministry staff if assistance is required to complete this calculation.

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Appendix G - Nutrient Management Strategy and/or Plan Sign Off Form

Ontario Ministry of Agriculture, Food and Rural Affairs

Nutrient Management Strategy *and/or* Plan Sign-Off Form

1. Contact Information

Name of Farm Unit Operator

Legal Farm Name

911 Address *(Street No., Street Name, RR, Lot, Concession, Township)*

City/Town/Village	*Province* Ontario	*Postal Code*

Telephone No. *Home (incl. Area code)*	Telephone No. *Business (incl. Area code and ext.)*
E-mail address	Operation Identifier *(if previously assigned by Ministry)*

2. Applicant Declaration

As the farm unit operator, I hereby certify that

a. to the best of my knowledge, excluding unforeseen or uncontrollable circumstances, the information contained in this application provides an accurate description of the existing and proposed operation over the time period covered by this plan or strategy,

b. I understand that in the course of the administration of the Act, the Ministry may provide the information contained in this application to external agents or the Ministry of the Environment for review and analysis, and authorize the Ministry to provide this information to its external agents, and authorize its external agents or the Ministry of the Environment to collect this information from the Ministry, and

c. I, the applicant, ☐ authorize *OR* ☐ do not authorize
the Certified Nutrient Management Planner who prepared this strategy and/or plan to act as my agent for the purposes of obtaining approval for this application, and to provide the Ministry, or its agents, any information required in the review of this application.

Name of Applicant *(please print)*	Signature	Date *(yyyy/mm/dd)*

3. Declaration of Individual who Prepared this Strategy and/or Plan

I, the individual who prepared this strategy and/or plan, hereby certify that based on relevant information provided in good faith and excluding unforeseen or uncontrollable circumstances, the recommendations contained in this application will, if implemented, result in acceptable management practices in accordance to the regulation and protocols under the *Nutrient Management Act, 2002*.

Certification No. *(if applicable)*

Name of Individual who Prepared this Strategy and/or Plan *(please print)*	Signature	Date *(yyyy/mm/dd)*

4. Provision of False Information in this Application

Any false or misleading information submitted by the applicant in this document may result in the invalidation of any approvals or permits granted, and prosecution in accordance to the provisions of the *Nutrient Management Act, 2002*.

This application may consist of all or some of the following:

- Overview of the Operation
- Farm Unit Declaration
- Farm Unit Sketch
- Description of Storage Facilities
- Description of Generating Facilities
- Location and Identification of Incoming
- Prescribed Material Transfers
- Nutrient Content of Prescribed Material
- Destination of Prescribed Material
- Transfer of Prescribed Material
- Volume of Prescribed Material Produced Annually
- Contingency Plan
- Field Properties
- Field Sketches
- Soil Samples and Analysis
- Crop Rotation and Yields
- Tillage Practices
- Commercial Fertilizer Application
- Application of Prescribed Materials
- Agronomic and Crop Removal Balance for Nitrogen and Phosphorus

Notice of Collection

Personal information provided in this application is collected under the authority of the *Nutrient Management Act, 2002* and Ontario Regulation 267/03, s. 28(1), s. 29(1) & (1.1), or s. 30(1) & (1.1). It will be used for the review, approval, enforcement and audit of the strategy or plan and research. The information may be made available to external experts contracted by OMAFRA for advice during review and approval, and to the Ministry of the Environment for advice during review and approval or for enforcement purposes. The following information from approved strategies or plans will be used to create a public record:

1. name of farm operation;
2. owner of the farm unit and developer of each strategy or plan;
3. properties covered by the declared farm unit of each strategy or plan;
4. days storage in each strategy; and
5. the proportion of the nutrient applied to the declared farm unit of each strategy or plan, and the proportion moved to other properties.

Questions about the collection of information can be directed to the Manager, Approvals, Nutrient Management Branch, Ministry of Agriculture, Food and Rural Affairs, 1 Stone Road West, Guelph ON N1G 4Y2, telephone: 519-826-6368.

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Special thanks to all those who have contributed to this publication by lending their expertise and resources.

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To Obtain More Information:
A listing of other publications related to the Nutrient Management Act, 2002 and course information can be obtained from the OMAFRA website at **www.omafra.gov.on.ca** or by calling the Nutrient Management Information Line at 1-866-242-4460.

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This publication reflects the opinions of the contributing writers and is based on the information available as of the date of publication. It is based on a fictional property and fictional situation. It should not be regarded as an exact model for a NMP. This publication may be updated as required.

Notes

Notes

Contact OMAFRA for more information:

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